THE MAC Flyer

OCTOBER 1983

HH-60D Night Hawk...page 16

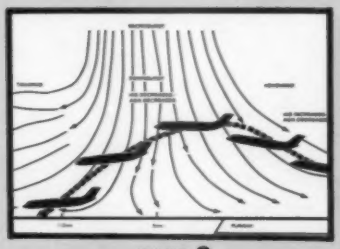
THE MAC Flyer

For Greater Safety in MAC Air Operations

October 1983 MACRP 127-5 VOL XXX No. 10

Gen Thomas M. Ryan, Jr. Commander in Chief
Brig Gen Paul A. Harvey Inspector General
Col John G. Stephen Director of Safety

Maj James M. Lee Supervising Editor
Capt Gale E. Clouse, Jr. Associate Editor
Capt Byron L. Howard Associate Editor
Frances A. Caldwell Managing Editor
Tom O'Laughlin Art Director



page 8

page 25

About the Cover:
Artist's depiction adapted from *Technical Directions*.

Features

3 **Just Another Birdstrike**
That's what *you* think!

8 **Blueprint for Disaster**
A sobering look at microbursts.

15 **What the Heck is *TMF?***
A statement of editorial policy.

16 **HH-60D Night Hawk**

20 **An Unheard Voice**
"I ought to know—I was there!"

25 **C.R. Terror**
The Halloween Honcho strikes again!

Departments

5 **Flying-Hour Milestones**

6 **Excellence in Airmanship**

12 **AWTH**

13 **Mishap with a Moral**

23 **Viewers Guide**

24 **Deja Vu**

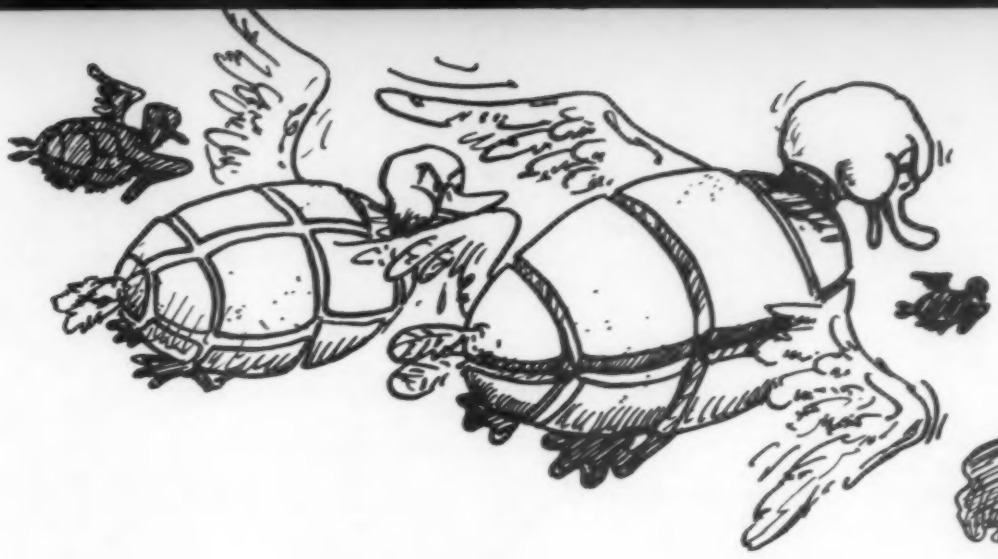
28 **Quick Stoppers**

31 **After Deadlines**

The MAC Flyer is published by the Directorate of Safety, Military Airlift Command. The contents are informative and not regulatory or directive. Names of people and places in mishap stories are representative and not necessarily of the aircraft or equipment involved. Information in any article may not be construed as incriminating under Article 31, UCMJ.

Contributions, comments and criticisms are welcome. Write: *The MAC Flyer,* HQ MAC/IGFE, Scott AFB, IL 62225; or call 618-256-3534, or Autovon 638-3534. The editors reserve the right to make any editorial changes in manuscripts which they believe will improve the material without altering the intended meaning.

Subscriptions available from: The Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Changes of address for subscription mailing should be sent to GPO. Give both old and new addresses, including zip codes. USAF Active and Air Reserve Forces units establish requirements for this magazine through their publication distributor (DAPD). Other U.S. Military units should consult administrative directives. *The MAC Flyer* is published at an approximate ratio of one magazine for every five MAC aircrew members, and one for every twenty MAC support personnel. Distribution X; OPR: HQ MAC/IGFE ISSN 0024-788X



And I thought this was going to be...

Just Another Birdstrike

by Major Michael G. Luckenbach
436 MAW Flying Safety
Dover AFB, Delaware

I was just sitting down to a Sunday supper of grilled steak, getting ready for that first bite when, as usual when you're "on call," the phone rang. A command post controller was on the line and Safety One's presence was requested on the flight line to investigate a C-5 that had just landed with bird strike damage. The standard picture flashed through my mind. You know, the one most aviators picture—a little blood, maybe some feathers, a small dent in the fuselage. I quickly grabbed the radio and my line badge. As I walked out the door I told my wife to put the steak in the oven, and that I ought to be back in an hour.

On my way to the base, I noticed the weather wasn't too pure. What are birds doing in this mess? They don't fly in weather, I thought. We had a lot of fog, intermittent drizzle and low ceilings—the typical evening that horror stories are staged around, stories similar to the one about to unfold.

I checked into the command post, reconfirmed the parking spot and tail number. They confirmed there were no injuries, but the plane had received significant damage. Significant damage from a bird strike?

Darkness was rapidly approaching as my car's headlights lit the nose of the aircraft. The radome looked a little strange as I identified part of a goose hanging on the side of the aircraft where the fiberglass radome joined the fuselage. Walking up to the radome and wondering about the goose, the weather, and my almost-eaten supper, my thoughts were interrupted when a maintenance man said something about number 4 engine being shut down because of a fire. From the bird strike, I wondered? My flashlight now burned through the wet night air at the number 4 engine and illuminated a football size dent in the nose cone along with clumps of blood and feathers. An education and new respect for birds was now beginning.

More feathers and dents were apparent on the leading edge of the cowling. It wasn't hard to see that large pieces of metal were missing from the first and second stage fan blades, either. I began to imagine what those pieces of metal did to the other 14 stages of blades running through the $1.5 million dollar engine. Reality quickly returned when I walked around the engine and saw large jagged holes ripped through the cowling by a disintegrating engine rotating at 8,000 rpm.

It started to drizzle again as I made my way to the number 3 engine. Still shocked by the damage to number four, I wondered what the other engines looked like. Damage looked fairly light except for occasional blood-covered dents in the leading edge of the cowling. Then I raised my flashlight a little higher and immediately saw two bullet size holes on the outboard side of the number 3 engine pylon. That area contains the major system's lines running to the engine: fuel, electric, hydraulics—all the stuff that fires are made of. Luckily, none of the lines had been hit. The holes were caused by shrapnel flying off the number 4 engine. A picture of an exploding "goose grenade" passed through my mind.

Passing beneath the goose still hanging from the radome, I did a quick inspection of the nose wheel well area. One or two geese had crashed through the nose wheel well bulkhead and had come to rest 10 feet *inside* the fuselage!

More interested in the engines, I started surveying the number 2 engine. This was the engine that had been pulled to idle due to overheat and severe vibrations. (The vibrations were so bad, in fact, the throttle shook out of the pilot's hand.) A "goose grenade" had struck again. The fan blades showed the same damage as number 4 with more bird remains. I was amazed this engine had stayed together, even if it was at idle power during most of the flight. Fortunately, outside of feathers and apparent minor fan damage, number 1 engine appeared to be relatively intact.

Walking back to the car after my initial inspection, a strange, sick sensation came over me. The aircraft had impacted a large flock of geese, possibly not more than 100 feet above the ground, during a heavyweight (680,000 lbs) takeoff, with weather near minimums and 40 passengers onboard. The birds had taken out two engines, done extensive damage to the leading edge slats, and managed to damage the landing gear, but fortunately not enough to cause gear problems. With the odds totally stacked against them, the crew had somehow been able to put the aircraft safely back on the ground following an emergency return.

Pictures can't do justice to the magnitude of damage that bird strikes did to this airplane. Unless you've actually seen the damage and erased the standard aviator picture of a few feathers, a little blood, and a dent in the fuselage, it's not easy to respect bird stikes. But bird strikes have previously been fatal to humans and they could easily have been this night. Only the quick, professional action of an experienced crew kept a C-5 and all on board from becoming victims of a. . . bird strike!

Editor's Note: For further information on the lethal hazards of bird strikes, see "Battling the Birds," April 1983 *TMF*.

Flying-Hour Milestones

MSgt Ralph W. Rissmiller, 193 ECS

Lt Col Charles A. Bablo, 22 MAS
Lt Col Donald L. Ridgway, 337 TAS
Lt Col John D. Quick, 193 ECG
Lt Col Gordon H. Seeser, 193 ECG
Lt Col David P. Witmer, Jr., 193 ECG
CMSgt Thomas A. Lowe, 193 ECG
MSgt Paul T. Heath, 313 MAS
MSgt Robert Jasinski, 193 ECS

Col Robert E. Harris, 193 ECG/CC
Col Frank E. Willis, 317 TAW/CC
Lt Col Carl R. Beck, 193 ECG
Lt Col Robert V. Carter, 193 ECS
Lt Col Thomas L. Cope, 193 ECG
Lt Col Wendell A. Dutt, 36 TAS
Lt Col Walter R. Ernst, II., 193 ECG
Lt Col Adolph R. Hearon, 193 ECG
Lt Col Robert J. Hoffman, 193 ECG
Lt Col George J. Kostival, 193 ECS
Lt Col George C. Meyer, 193 ECS
Lt Col Donald W. Neal, 774 TAS
Lt Col William L. Nicks, Det 4, 1401 MAS
Lt Col Charles L. Stanton, 327 TAS
Lt Col Alan C. Swanson, 2 AD
Lt Col Ernest R. Webster, 301 ARRS
Maj Bruce K. Blocher, 36 TAS
Maj Gary M. Boutz, 301 MAS
Maj Patrick T. Conner, 301 MAS
Maj John J. Coughlin, Jr., 36 TAS
Maj Thep R. Diltz, Jr., 301 MAS
Maj Charles D. Greene, 8 MAS
Maj Lawrence D. Miller, 193 ECG
Maj James E. Peterson, 97 MAS
Maj Richard L. Ray, 337 TAS
Maj Laurence R. Rutt, 193 ECG
SMSgt Bruce E. Brunkow, 4 MAS
SMSgt James M. Spittle, 193 ECS
MSgt Leo P. Batz, 193 ECS
MSgt Clarence W. Bauder, 193 ECS
MSgt William W. Bickel, Sr., 193 ECS
MSgt Milford M. Bragg, Jr., 313 MAS
MSgt James Cason, 815 WRS
MSgt Theodore P. Dupre, 193 ECS
MSgt Andrew J. Hricak, 193 ECS
MSgt Augustine J. Interrante, 193 ECS
MSgt Bruce C. Keefer, 193 ECS
MSgt Jesse W. May, 193 ECS
MSgt Warren C. Miller, 193 ECG
MSgt Toney A. Murphy, 815 WRS
MSgt Melvin L. Ruby, 193 ECS
MSgt John K. Slote, 193 ECS
MSgt Norris Stevens, Jr., 20 MAS
MSgt Gene R. Soliday, 193 ECS
TSgt Stephen M. Peavey, 4 MAS
TSgt Gregory E. Rion, 7 MAS
TSgt Lawrence A. Stringer, 4 MAS
SSgt Paul M. Powell, 9 AES

Maj Gary L. Robinson, 39 ARRW
TSgt Louis G. Nichols, 38 ARRS

(Ranks and units at time of awards. See MACR 900-3 for details on how to apply for your own milestone award.) ★

Excellence in Airmanship

Standing l to r: MSgt Richard Harada, Jr., IFE; SSgt Alan Scheel, LM; Lt Col Richard Hazell, IAC; and SMSgt John Quigley, FEFE. Kneeling l to r: Capt Herbert Eppleman, CP; and Maj Stanley Bastien, IN.

Lieutenant Colonel Richard G. Hazell and crew, 142 TAS, were returning from a local training mission. As the C-130A's landing gear was extended for a full-stop landing at Greater Wilmington Airport, Delaware, the nose and right main gear extended normally, but the left main stopped after moving about one quarter of its normal travel down. The crew quickly ended their approach and diverted to an area free of traffic.

After depressurizing the utility hydraulic system, and pulling the landing gear circuit breakers, an attempt was made to hand crank the left gear down, but without success. When the flight engineers, Senior Master Sergeant John R. Quigley and Master Sergeant Richard H. Harada, Jr., together with the loadmaster, Staff Sergeant Alan L. Scheel, removed the left dual rail covers and the landing gear inspection plates to gain access to the landing gear mechanism, they spotted the Herk's problem. The anti-skid junction box retainer ring had dislodged from its normal position in the landing gear strut and was wedged between the bottom of the strut and the landing gear shelf bracket. Since this part is about 4 inches in diameter and constructed of 3/4-inch stock, it was evident that the gear could not be extended until the retainer ring was removed.

The crew then decided to hand crank the gear toward up. If this failed, the final attempt would be to recycle the gear using high torque, thus risking the possibility of damage to the mechanism since the gear would not be available otherwise. The jammed part was now secured to the aircraft. While Sergeant Harada took a position at the landing gear using a large screwdriver as a pry bar, Sergeant Quigley applied his full strength on the landing gear hand crank. Just as the crank bent under the strain, the gear moved, freeing the jammed part. After the part was brought back into the aircraft, the gear was allowed to free-fall to the down and locked position.

The calm professional manner in which this crew diagnosed and solved this problem prevented further damage to the landing gear, and the possible loss of the aircraft. *TMF* salutes Colonel Hazell and crew's "Excellence in Airmanship."

Captain Richard Miller and crew, 64 TAS, were enroute in their C-130A from Rio de Janeiro, Brazil, to La Paz, Bolivia, on a Volant Oak mission. While cruising at FL 240 overhead Santa Cruz, Bolivia, the engine low-oil-quantity light illuminated. A glance at the engine instruments showed a decreasing oil supply for the number 2 engine. A scan of the engine revealed fluid streaming from the number 2 engine cowling. The crew briefly discussed the merits of a cruise engine shutdown, but with the continuing rapid depletion of oil, performed an emergency shutdown of the errant engine.

The precomputed "driftdown" numbers

showed the aircraft capable of maintaining an altitude of 19,000 feet MSL on three engines. With the 22,000 foot Andes Mountains looming between his present position and La Paz, Captain Miller couldn't reach his destination. In addition, the remaining fuel on board didn't allow a return to Rio de Janeiro. The crew's options narrowed to one—they had to proceed to their filed alternate, Santa Cruz, Bolivia, the city right below their present position.

As if the crew didn't have their hands full with the emergency, some new factors quickly complicated the situation. Unknown to the crew, the Bolivian air traffic controllers at Santa Cruz were involved in a labor dispute and all navigational aids were off the air. Repeated attempts to call controllers to request an emergency descent went unanswered; likewise, the crew failed in their efforts to tune in the Santa Cruz NDB.

With the challenge of staying in VMC conditions becoming greater as the forced descent continued, Lieutenant Colonel George Piper, the C-130 navigator, guided the aircraft through the Bolivian hazardous terrain and some approaching thunderstorms. Finally, the crew was able to identify some local terrain features and began "map-reading" their way to the airport.

By now, Captain Miller and his crew had descended to 1,500 feet AGL in order to stay clear of the weather and to view the ground. After finally establishing radio contact, tower personnel turned on the NDB to provide the crew with help in finding the airport.

As the aircraft finally neared the field, a further delay was encountered. Several trucks, placed along the runway in conjuction with the ATC labor dispute, blocked the runway. As the crew waited for the trucks to be moved, thunderstorms edged closer to the field threatening to make it unusable. As the final truck was moved off the runway, Captain Miller made a visual approach to the airport and made a safe, three-engine landing. Within moments of clearing the runway, the entire airport was engulfed in a thunderstorm.

Captain Miller and crew exhibited a calm, professional command of the situation at all times. Their teamwork during their inflight emergency truly reflects "Excellence in Airmanship."

Standing l to r: SSgt Michael Flores, LM; SMSgt David Hegy, FE; Capt Richard Pellicore, CP; and Capt Richard Miller, Jr., AC.

Blueprint for Disaster

A sobering look at microbursts!

by Lieutenant Commander Joseph F. Towers, USNR
VR-57, NAS North Island
San Diego, California

Editor's Note: We realize not all MAC aircraft have AOA indicators. However, this article contains excellent information concerning the "microburst" phenomenon and should be interesting reading to all MAC crewmembers. If it prompts you to do more individual research on the subject, that's even better yet!

At New Orleans International, several aircraft waited in line for takeoff clearance. Dark, ominous thunderstorms hung threateningly over the departure end of runway 10. Reports of wind shear were transmitted over tower and ground frequencies. Several aircraft on final had made pireps regarding the phenomenon.

Clipper 759, Pan Am's regularly scheduled flight from Miami to Las Vegas, was taxiing for takeoff. Unknown to the crew, a flight departing on another runway had just finished what they considered an abnormal takeoff. Heavy rain and wind had forced them to rotate early.

Meanwhile, thousands of tons of warm, moist air drawn aloft by convective clouds, billowed and expanded above runway 10. By now, an intense, localized downburst of violent wind and torrential rainfall was descending with increasing intensity from above 10,000 feet. The sky was overcast with a wall of heavy rain hitting the far end of the runway.

Clipper 759, cleared for takeoff, accelerated on the rain-drenched runway, rotated and lifted off. The landing gear was retracted as the crew noted a positive climb rate. Suddenly, the acceleration virtually ceased. Realizing the 727 was settling, the captain told his copilot (who was actually flying the plane), "Come on back, you're sinking, Don—come on back." The final sounds heard on the cockpit voice recorder were those of the ground proximity warning system and initial impact. During the 20-second flight, Clipper 759 encountered a deadly microburst. Takeoff a few minutes later or earlier could have meant life instead of *death*.

A microburst is an intense, highly localized downburst with velocities of 60 knots or more that hits the earth and spreads out horizontally in a radial burst of violent wind. It may originate beneath any type of convective clouds and has a life cycle of only 2 to 5 minutes. It's just as likely to develop in a little or no-rain situation as in a very heavy rain situation. A microburst has a diameter of 1,000 to 4,000 meters with maximum differential velocities existing approximately 100 feet AGL. The greatest probability of development occurs during the spring and summer months in the mid to late afternoon.

According to Dr. John McCarthy, senior research scientist with the Joint Airport Weather Studies (JAWS) Project, a microburst of *mean intensity* produces a horizontal differential velocity of approximately 55 knots, while the *strongest can produce differentials in excess of 100 knots.* In fact, many microbursts are so severe that being hit by one at the right point in space and time, like during a takeoff or approach, will almost certainly result in disaster, regardless of aircraft type. In case you're thinking this phenomenon is a rare occurrence, guess again. The extent of microbursts in nature is far greater than anyone ever expected.

Detecting the Microburst

A microburst has three distinct phases as an aircraft traverses it. As illustrated, the main force is downward with an associated gust front that moves outward radially from the focal point of the microburst as it nears the earth.

Initial signs of a pure headwind burst should include an increase in indicated air-

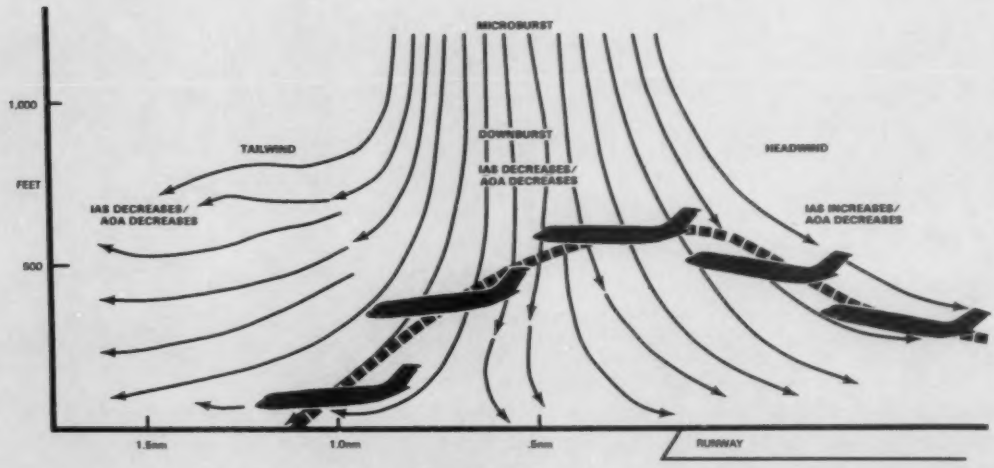
Copyright, 1983 by LCDR Joseph F. Towers

speed and a nearly constant angle of attack. This increase in dynamic pressure, with a relative constant coefficient of lift (C_L), generates additional lift. As a result, aircraft performance increases and a higher-than-normal flight path is achieved. The headwind phase begins to develop a downward vector component as the wind pattern transitions to the downburst phase. During this period, the resultant relative wind continuously reduces the angle of attack (AOA). As the downburst phase is entered, cockpit indications will register a further reduction in AOA, accompanied by decaying IAS.

As the flight profile continues, both IAS and AOA will be continually reduced, with more critical deterioration in aircraft performance. Obviously, some extreme measures may be required to survive.

In many situations, it takes only a relatively small reduction in AOA (less than 10°) to critically affect the aerodynamic performance of the airfoil. Furthermore, a severe reduction toward negative values can result in near zero generation of lift, with or without significant losses of indicated airspeed.

Rotating the aircraft to a higher deck angle can change the AOA to a more favorable reference. The application of maximum



An aircraft flying through a microburst will experience significant gains followed by losses of indicated airspeed and critical reductions in angle of attack. Combined, the reduction of IAS and AOA will severely impair the aircraft's ability to generate lift and sustain flight.

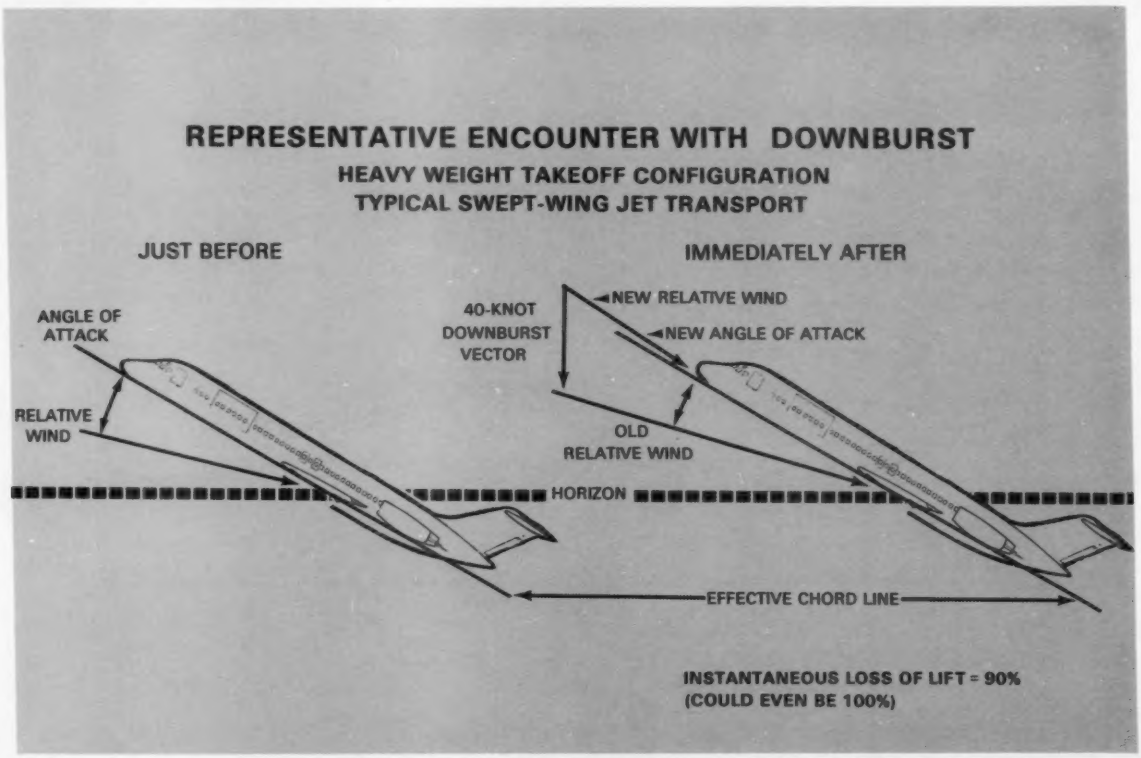
thrust will normally serve to accelerate the aircraft mass, thereby generating a new relative wind and AOA, and placing the aircraft in a safer flight regime. Prior to the encounter, faster approach and departure speeds diminish the detrimental effects of the downward vector components. Furthermore, this provides an increased buffer above stall and gives the aircraft a greater energy tradeoff, (kinetic energy for potential energy), should it be required.

A takeoff or landing shouldn't be attempted when there are mature thunderstorms in the immediate vicinity of the departure or approach corridor. The development of a torrential downburst and associated gust front can produce a dangerous low-level wind shear condition that can exceed the aerodynamic capability of your aircraft.

Transport Category Aircraft

Over the years, two distinct schools of thought have evolved on how to optimize aircraft performance during a chance encounter with a microburst. One technique is the "stick shaker" method, while the second technique involves flying out at the minimum drag speed. The determining factor in choosing which method to employ appears to be primarily a function of where the aircraft is in relation to that enigmatic point of *extremis*, and whether long or short-term climb performance is required. Regardless of which method is more correct, there continues to exist an obvious failure in achieving the performance required to avoid ground impact, e.g., aircraft are still crashing!

During microburst conditions, a potentially deadly situation exists in which an aircraft may be robbed of essential indicated airspeed to the point where it's now below the approach, departure or minimum drag speed. As pilots, we're often more concerned with loss of airspeed than flight path control. Furthermore, we have little or no awareness of the effects that a dramatic change in angle of attack can have. I contend that



This figure illustrates the severe reduction in angle-of-attack that can occur during the highly dynamic conditions of a microburst, and the development of a transitory and intermittent flight regime of near-zero generation of lift. The net effect is that overall lift generation is virtually decimated! (Illustration adapted from Douglas Aircraft)

during extremis microburst conditions, lowering the nose of your aircraft results in a further, more critical reduction in AOA, a significant loss of altitude, a degradation in climb performance and ground impact. I feel the favorable alternative would be to apply maximum thrust while smoothly increasing pitch attitude until the descent is arrested *OR* a stick shaker condition is reached.

Deck angles during this maneuver may exceed the maximum pitch attitude normally recommended during a missed approach or takeoff. If this slow-speed climb regime is exercised, however, it may provide the additional performance required to avoid ground impact. Airspeed, again, can be traded down to shaker speed (kinetic energy for potential energy), if available, when short term climb performance is required.

The Most Ideal Solution

So, this is how it all comes together. If you're ever confronted with an extremis microburst encounter, your best chance of surviving lies in applying *maximum thrust* (and executing a missed approach) while:

- Rotating to the *AOA for maximum lift generation* to discontinue or prevent a downward vector and, once level flight or positive climb rate is attained, then;
- Flying out at *AOA for best angle of climb* until a positive rate of climb is established and obstacles are cleared; finally
- Accelerating to the *AOA for best rate of climb*.

These AOAs should closely correspond to the minimum drag line (AOA, not IAS) where thrust available exceeds thrust required by the largest margin, thereby producing the greatest possible inertial acceleration in the upward plane. This technique should provide positive lift generation slightly in excess of and then nearly equal to weight. Optimizing all the physical forces of flight and precision control of angle of attack are important keys to success during this critical phase of flight. This assumes, of course, that the given aerodynamic capability of the aircraft can exceed the physical forces of the shear or microburst. This is a dynamic condition requiring continuous adjustments in attitude until steady flight conditions are regained.

Under severe microburst flight conditions, IAS is an inferior and invalid parameter for adequately deciphering the entire aerodynamic picture. Consequently, the indiscriminate chasing of IAS in an escape maneuver, without cross-referencing other instrumentation, can, in and of itself, kill!

Passing Extremis

During microburst flight, there exists a critical limit beyond which the point of extremis is clearly passed. Beyond this limit, recovery can't be effected. When the pitch attitude has been reduced (even a few degrees), or the AOA has been reduced to near zero or some negative value, the aircraft experiences less than one G flight. Analysis of past mishap flight recorder data reveals that approximately .75 G or less typically exists for several seconds during this transition past extremis. During this period, any rate of climb then deteriorates into a rate of descent. This is an indication the AOA has been severely reduced and lift generation is now significantly less than weight. These conditions produce an unbalanced force with a resultant downward vector component and in turn, accelerates the aircraft with an increasing, downward vertical velocity. This inevitably results in ground impact! During this latter phase, IAS may even register an increase due to acceleration.

So far as you and I are concerned, it's imperative we maintain a minimum of one G flight and avoid the development of a descent rate. If a positive climb rate can't be initially maintained or achieved, attempt to fly out in at least a level flight condition. Once this downward acceleration has developed, it requires an extraordinary force to overcome, one which is nearly impossible for an energy deficient aircraft to generate, especially when given very limited time and altitude constraints.

I believe that a solution to the wind shear threat may be found in the precision control of the relative wind through angle of attack and the optimizing of all the physical forces of flight. All of this, by the way, is simply a fine tuning of the phrase "power plus attitude equals performance." The problem with wind shear conditions is that because the relative wind is changing so dramatically, it may easily exceed our ability to negotiate it! The answer may be in the wind, but the successful execution of the performance required to survive can be as elusive as the wind itself. ✈

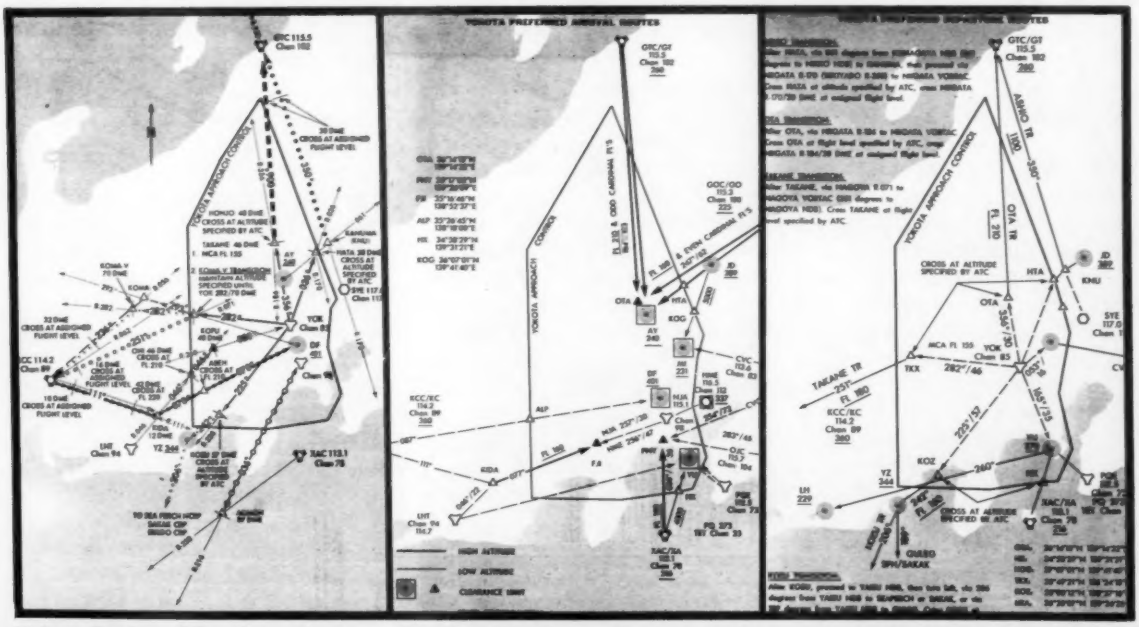
Editor's Note: Primary factors in 80 recent Accident Waiting To Happen (AWTH) reports have involved the following: weather, 18; transient acute fatigue, 13; over-extended capabilities, 12; pressure, 10; took unnecessary risk, 10; task saturation, 9; and crew coordination, 8. In addition to tracking AWTH reports for adverse trends, we publish inputs to make us all think about our actions, with the ultimate goal of preventing mishaps.

Yokota Preferred Routings

Primary factor: Unusable data until translated.

The AWTH submitter identified Yokota preferred routings in the January 1983 Pacific enroute supplement as being extremely difficult to interpret. Compulsory and non-compulsory reporting points were described as "ambiguous and unreasonably presented." According to the AWTH submitter, the Yokota preferred routing depiction needed "greater distinguishing features between fix designations."

With the publication of the 14 April 1983 Pacific enroute supplement, the chart mentioned by the AWTH submitter has been replaced by two separate depictions. These include Yokota preferred arrival and preferred departure routes. While we're glad to receive all AWTH inputs, including data on flight information publications (FLIP), please continue to use DOD FLIP user comment cards found in enroute supplements. These user cards are forwarded directly to the Defense Mapping Agency Aerospace Center in St. Louis. Your timely corrections and critiques of FLIP products can result in better flight information products for all of us.



Yokota Preferred Routings, circa January, 1983.

The Way It Is Today—Two charts have replaced the difficult-to-read one.

Killer Ice

The corporate Beechcraft Super King Air 200 landed and taxied in at Arapahoe County Airport near Denver, Colorado. Due back in Texas later that March afternoon, the flight crew made preparations for the return trip.

While the copilot directed servicing, the captain received a weather forecast from the Denver flight service station. The weather briefer advised him there was forecast light rime icing between 8,000 and 11,000 feet MSL and the forecast called for moderate mixed icing in the Denver area during the afternoon. Following the briefing, the pilot filed his IFR flight plan from Arapahoe Airport to Lufkin, Texas.
from Arapahoe Airport to Lufkin, Texas.

About 1330 the flight crew returned from lunch and requested deicing due to light snow on the aircraft. The ramp employee soon brushed the wet snow from the aircraft's wings and tail surfaces. The crew, however, declined his offer to spray the aircraft with deicer fluid. About 1 to 2 inches of snow remained on the top of the aircraft back to the vertical fin following the snow removal efforts. None of the ramp personnel saw the pilots preflight the aircraft, which was over its maximum takeoff gross weight by 600 pounds.

N456L, with the 2 pilots and 8 passengers on board, departed Arapahoe at 1434. At 1443 the copilot radioed Denver departure control, "Okay, we would like to go back to Arapahoe County. We're getting (a) little too much ice up here." Initially provided vectors back to Arapahoe, some 14 miles behind them, the crew unexpectedly requested vectors to Stapleton IAP in Denver, over 25 miles away.

At 1448 the crew asked for a descent from 11,000 feet because "we can't hold it here at eleven." A minute later, after descent to 10,000 feet the copilot radioed, "Okay, we'll declare (an) emergency if necessary, just get us straight to the runway." Subsequent conversations with the crew indicated worsening conditions. At 1449:53 the crew indicated, "Five Six Lima's gonna be descending all the way." The Stapleton airport was now 21 miles away. At 1452 radar contact with N456L was lost 18 miles

southeast of Stapleton. The last known altitude of the aircraft, as reported by a Denver approach controller, was 7,700 feet.

The aircraft crashed into an open field at 6,280 feet MSL and was destroyed by the impact and postcrash fire. There were no survivors.

Analysis

The National Transportation Safety Board (NTSB), finding no problems with crew or aircraft, looked at two causal areas—power loss and airframe icing. The radar-derived ground track and flight profile analysis of the aircraft's performance found a definite loss of performance during the flight. Since no evidence was found to substantiate a power loss caused by mechanical failures, the board looked further at the suspected icing problem.

Accumulated inflight icing was a major factor in this mishap. Because initial climb performance approached 1,500 feet per minute, NTSB personnel determined that ground-accumulated airframe icing did not cause the mishap. The NTSB then centered its investigation on the inflight icing.

Shortly after takeoff, N456L encountered severe clear and mixed rime icing conditions and remained in severe icing through the remainder of the flight. After on-site investigation, the NTSB ruled out mechanical difficulties with the deicing system. Deicing components examined in the wreckage were found to be properly installed, interconnected, and functional.

Further analysis revealed a normal climb airspeed of 160 KIAS or higher was maintained until 8,800 feet. At that point, N456L's airspeed decreased to near 140 KIAS, the minimum airspeed for flight in sustained icing conditions. The NTSB believed the aircrew either: (1) attempted to maintain the normal rate of climb by increasing the pitch attitude (and the angle of attack), which resulted in a decrease in airspeed; or, (2) attempted to expedite the climb through icing conditions by reducing the airspeed to or near the minimum icing penetration speed, thereby increasing the rate of climb.

According to the NTSB, the combination of the overweight aircraft at a low climb speed and the severity of the icing led to rapid ice accumulation on the unprotected surfaces of the wing. Furthermore, since the ice could not be removed by the deicing boots, the wing airfoil was eventually severely distorted and the aircraft's capability to maintain level flight was destroyed.

The NTSB believes the mishap pilot's decision to climb the aircraft at or near the minimum airspeed for flight in sustained icing conditions was one of the primary reasons for the mishap. Also, the delayed decision to return to the nearest airport, Arapahoe, led to a situation from which the crew couldn't recover.

Forecast and Pilot Briefing

Over 4 hours elapsed between the pilot's weather briefing at 1020 and the takeoff at 1434. There was no record of the pilots receiving an updated weather briefing after 1020. SIGMET Golf 1, later changed to Hotel 1, was issued during this period and called for moderate to brief severe icing for eastern Colorado.

The NTSB believes that if the crew had updated their earlier weather briefing, they might have taken different steps. These steps might have included changing the departure time, altering the route, or returning to Arapahoe more promptly when icing was encountered. The NTSB subsequently cited the failure to obtain an updated briefing as one of the primary causes of the mishap.

Probable Cause

The NTSB determined the probable cause of the accident was the rapid accumulation of ice on the underwing surface aft of the deicing boots. This destroyed the aircraft's ability to maintain level flight and occurred because the flight crew: (1) failed to obtain a current weather briefing before departure; (2) failed to make a timely decision to discontinue the climb and return to Arapahoe Airport; and (3) operated the over-gross-weight aircraft at high angles of attack in severe icing conditions.

Applications to MAC

As the winter months approach, icing becomes a major factor in the safe completion of many MAC missions. *Now* is the time to review those cold weather operating procedures and limitations.

—Adapted from NTSB AAR 82-9

What the Heck is *TMF*?

A statement of editorial policy.

Occasionally, people throughout the command (indeed, all over the world) may get a little confused about just what *The MAC Flyer*, or *TMF*, is all about. With the constant turnover of people in MAC, opinions about our purpose may become distorted. Some may think of us as the "MAC position," while others assume we're a public affairs forum. Still others think *TMF* is a flying safety magazine. So just what is the truth?

What is *TMF*?

In answering what we are, let's begin first with what we aren't. We aren't, for instance, a means to communicate official MAC policy, and have never tried to be. Too, we don't belong to MAC Public Affairs, though they're good folks and we work closely with them on some subjects. Briefly, that's what we aren't. So, here's what we are.

TMF is MAC's "primary medium for conveying professional educational flight safety material" to our main audience, and that's you, the standard MAC crewmember. The magazine is written by MAC crewmembers, for MAC crewmembers, though *TMF* is widely read around the world by military and civilians alike. And the basic purpose of the magazine hasn't changed since Lieutenant General Joe Smith gave the first editors their marching orders almost 30 years ago—"For Greater Safety and Efficiency in MATS Air Operations." That purpose is as valid today as it was then. So, the primary watchwords are "safety" and "aircrew." That means we don't publish any of a hundred other suggested stories on subjects not associated with flying safety. On the other hand, we don't ignore the contributions made by a legion of support people who do so much to accomplish our mission. In fact, they constitute our secondary audience.

With flying safety our business, we fall within the MAC IG chain of command. In fact, if you look at our MAC office symbol, IGFE, the first two letters tell you where we belong. The "F" stands for the Safety Directorate, and the "E" is us—the Education and Awards Division.

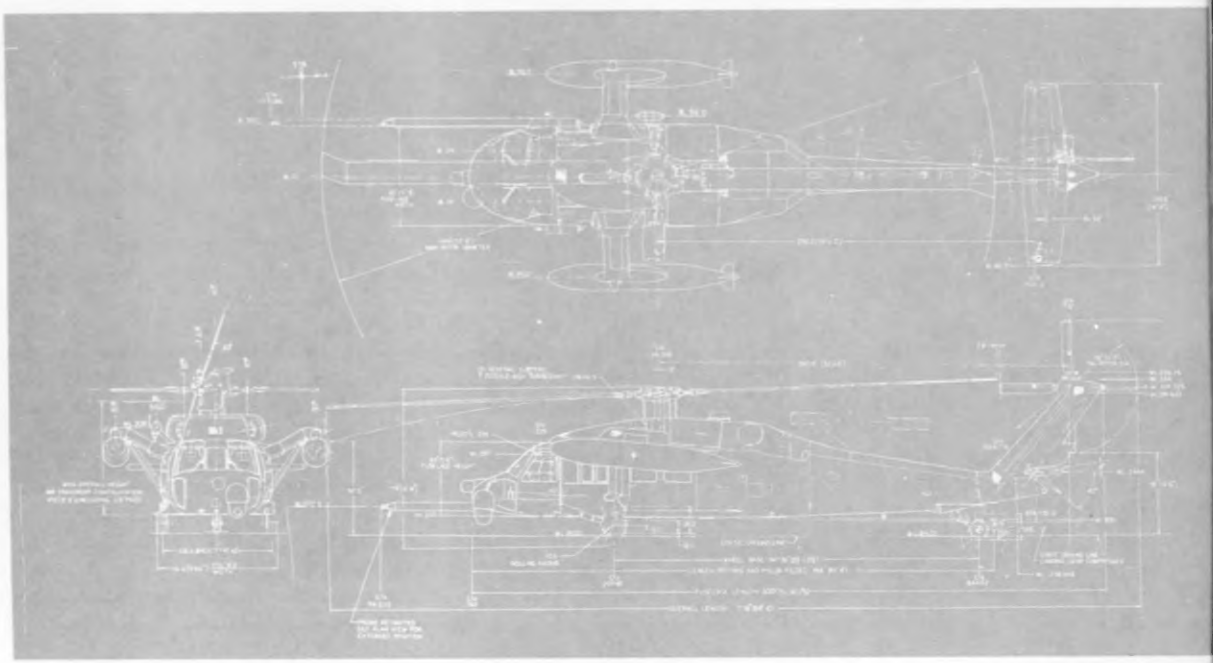
The magazine portrays aircrews and airplanes in crisis events handled in a timely and professional manner. We emphasize good techniques and, in a more serious vein, point out improper or questionable techniques so you'll also know what *not* to do if you're ever faced with a similiar situation. Our aim is not to point the fickle finger at anyone. As we clearly state at the front of each issue, names of people and places in mishap stories and reports are fictitious. Still, we try to offer you the opportunity to learn from both the mistakes and the attaboys of all of us in the flying business.

In our "Excellence in Airmanship," we do publish the real names of aircrew members who have performed professionally and safely in serious incidents. These people are recognized for their superior airmanship.

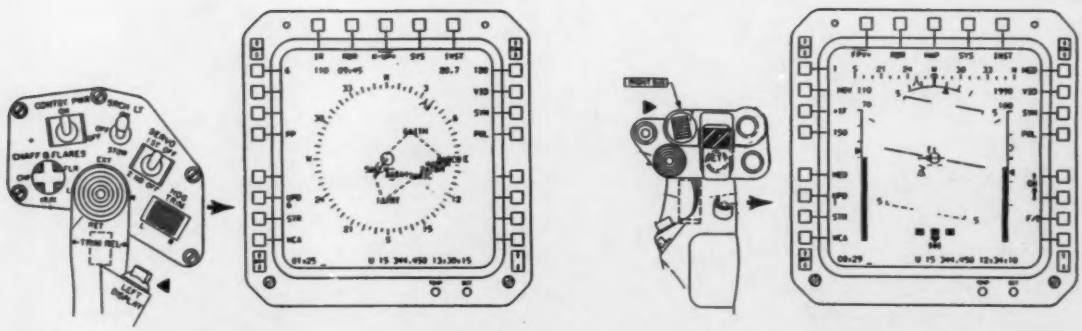
One last thing. The experience of the editors is pretty broad, but we still need your inputs to fill in the gaps—rescue, special ops, helicopter, weather recon, special airlift mission, maintenance—we need them all. For that matter, we're always looking for both fiction and non-fiction stories and articles. We also need photographs, art work, and ideas to keep your magazine among the best flying safety magazines in the world. So, the next time you're winging along at FL 450 (or FL 045) and you have a brainstorm, jot it down after you land and send it to us. Better yet, if you don't feel like writing, give us a call.

Remember, your contributions can help keep this command one of the safest in the Air Force. And that, friends, is what *TMF* is all about.

HH-60D Night Hawk



by Captain Gale E. Clouse, Jr.
Associate Editor



"Hands-On" CRT Control . Stick grip controls enable "hands-on" control during critical mission segments.

Survival! That's *the* number one concern of every crewmember downed behind enemy lines. Not only do crewmembers want to be rescued, but they want to be rescued quickly, day or night, in any weather. Our personal survival in a rescue situation will depend primarily on the capabilities of rescue forces helping us and how well they counteract hostile forces.

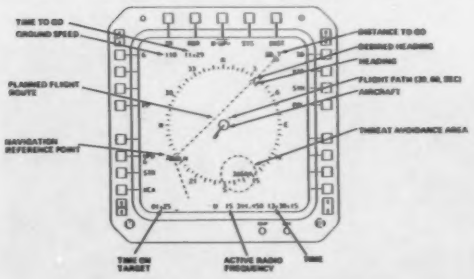
To enhance the survivability of our downed crewmembers and the rescue forces involved in their recovery, MAC is acquiring a new combat rescue helicopter. Also to be used by MAC's special operations forces, this helicopter is the HH-60D Night Hawk. Designed to operate in flight profiles minimizing enemy threats from fighters and armed helicopters, Night Hawk is in final development.

History

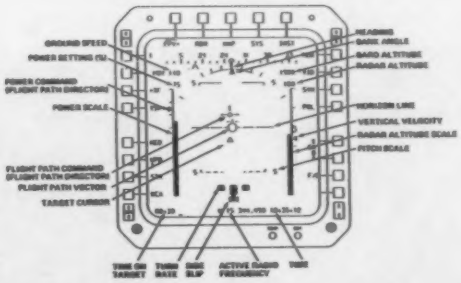
In 1977 MAC identified a requirement for a combat rescue helicopter capable of performing night and adverse-weather missions employing terrain masking. The new aircraft is scheduled initially to replace the HH-3 "Jolly Green Giant" and later the HH-53 "Super Jolly Green Giant." These aircraft were developed during the late 1950s and the early 1960s and were designed to operate in a less sophisticated threat environment. In particular, the present HH-3, which represents about half of the current combat rescue helicopter force, is equipped to accomplish the combat rescue mission only in a low/medium threat environment.

In October 1982 the Air Force awarded a full scale development contract for the

Horizontal Situation Display



Vertical Situation Display



Typical Display Formats

HH-60D. The airframe is a derivative of the UH-60A Black Hawk helicopter manufactured by Sikorsky Aircraft of Stratford, Connecticut. The associate contractor developing the Night Hawk's integrated avionics package is IBM of Owego, New York.

As a UH-60 derivative, the HH-60D will inherit many of the outstanding performance, maintainability, reliability, and survivability characteristics of the Black Hawk and the SH-60B Sea Hawk. Designed for combat missions, the original Black Hawk can hover out of ground effect at 4,000 feet altitude and 95° F temperature, and even climb vertically at 450 feet per minute under those conditions. The HH-60D meets stringent design requirements for flight maneuverability and agility, system redundancy, and crashworthiness. With a lower noise signature than current helicopters, the Night Hawk can operate closer to enemy forces with a reduced chance of being heard. Safety is enhanced through the HH-60D crashworthiness design features. A 2,500-foot-per minute impact is survivable in the HH-60D. Also, the crashworthy fuel system greatly reduces the hazard of fuel spillage and associated post-crash fires.

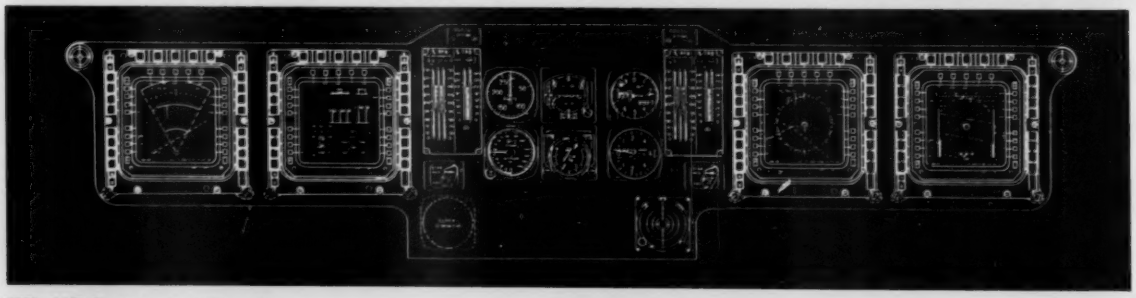
Improvements to the UH-60 airframe for the Night Hawk include:

- Uprated engines and main rotor transmission to provide 10 percent greater hover performance.
- Two external, inflight-jettisonable fuel tanks and an additional internal tank. The total fuel capacity of nearly 6,000 pounds of fuel gives the Night Hawk a 250 nautical mile radius of action with sufficient fuel for loiter, hoist, and reserves.
- A new, lightweight aerial refueling probe along with a redesigned fuel distribution system. Through aerial refueling from HC-130 tankers, the HH-60D will have unlimited range for rescue and special operations missions.
- SH-60B rescue hoist, capable of hoisting up to 600 pounds at variable rates up to 250 feet per minute.
- SH-60B automatic flight control system (AFCS) provides fully automatic approach to hovering, and egress from hover. Also, the AFCS has altitude hold, coordinated turns, and airspeed hold functions.
- Cabin reconfiguration capability within 90 minutes. A crew of 5 with 2 litters can be easily changed to crew of 3 and 4 litters, or alternately a crew of 2 with 10 passengers.
- Two 7.62mm machine guns and provisions for other armament.

Avionics

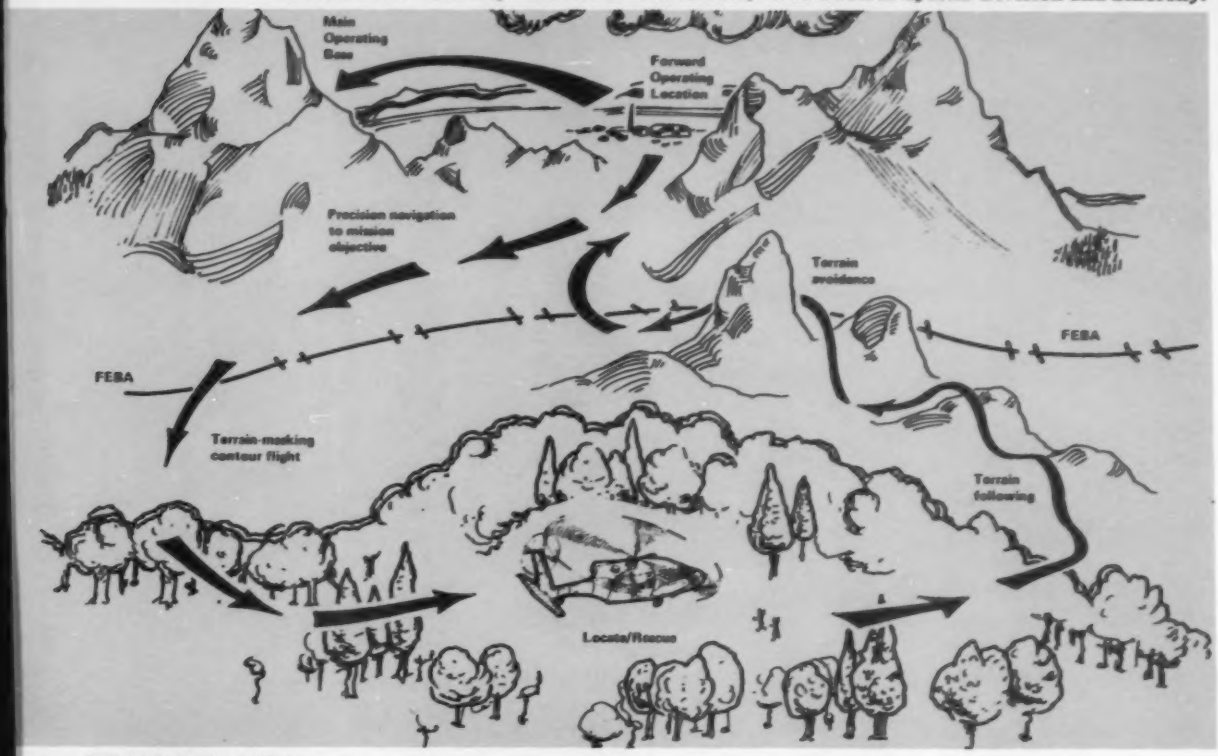
Key Night Hawk avionics include a multimode radar, forward looking infrared (FLIR), doppler/inertial navigation system, remote map reader, helmet mounted display, and an integrated cockpit. The multimode radar features both terrain following (TF) and terrain avoidance (TA). The Texas Instruments FLIR gives a TV-like picture of terrain ahead based on heat emissions. The FLIR has a clear field of view from +15° to -105° in elevation, and up to ± 190° in azimuth.

The inertial navigation system and doppler allow accurate self-contained navigation on all missions. Complimenting the INS is the remote map reader which allows terrain charts depicting the route, as well as actual aircraft position and enemy threat avoidance areas, to be presented on the cockpit cathode ray tubes (CRTs). A helmet mounted display provides vertical situation and FLIR imagery on a miniature screen attached to the pilot's helmet. This unique display, developed by the Army for the AH-64 helicopter, brings



HH-60D Instrument Panel

Illustrations courtesy *Technical Directions*, IBM Federal System Division and Sikorsky.



HH-60D Design Mission

the FLIR image close to the eye and provides a 40° field of view.

Reducing cockpit workload and thus enhancing safety in a high threat environment is achieved through cockpit integration. The integration incorporates a flight director function, alert by exception philosophy, computer monitoring of engine instruments, automatic initializing of control functions, and presentation of basic flight instrumentation on CRT displays.

Crucial information for the pilots is available on four large CRTs (two per pilot). The primary CRT, located at the pilot's eye level, gives vertical situation information and FLIR video. The inboard CRT is used to display horizontal situation data and video from the multimode radar and the remote map reader, either separately or superimposed.

Aircrew

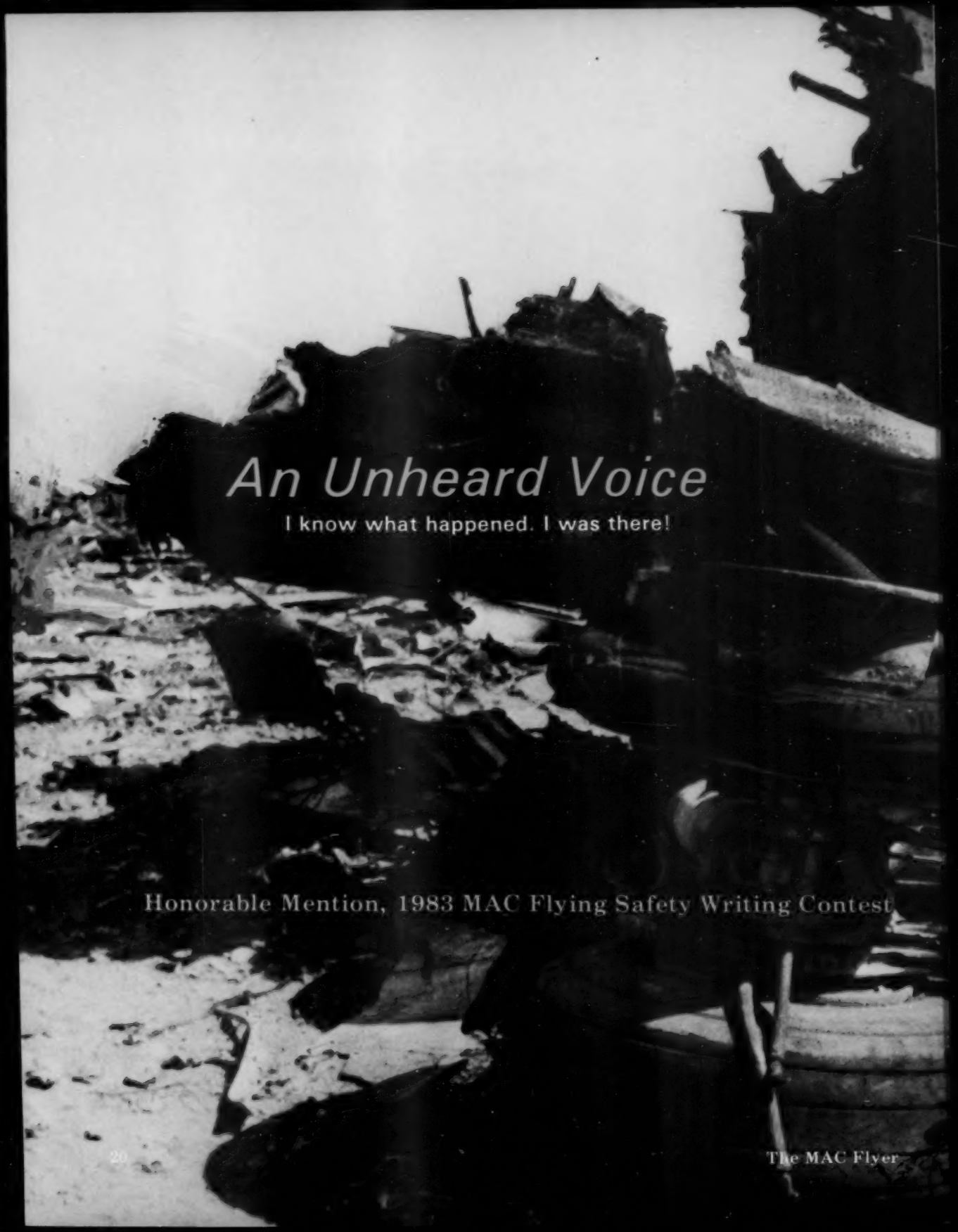
MAC aircrews from 23d Air Force will operate the Night Hawk and its sophisticated, integrated avionics. A basic HH-60D crew will consist of two pilots, a flight engineer, and a pararescue specialist (PJ). Two PJs will be used in combat.

The Future

Air Force Flight Testing of the Night Hawk will take place at Edwards AFB, California, and Kirtland AFB, New Mexico, during 1984-1986. The development test and evaluation at Edwards will measure HH-60D capabilities against specification requirements. The initial operational test and evaluation will judge operational suitability and mission effectiveness during operations at Edwards AFB, Kirtland AFB, and three forward operating locations in Alaska/Canada Europe, and Panama.

According to Major Ron Dietz, MAC Night Hawk program manager, the HH-60D "will achieve an operational capability in late 1987 or 1988."

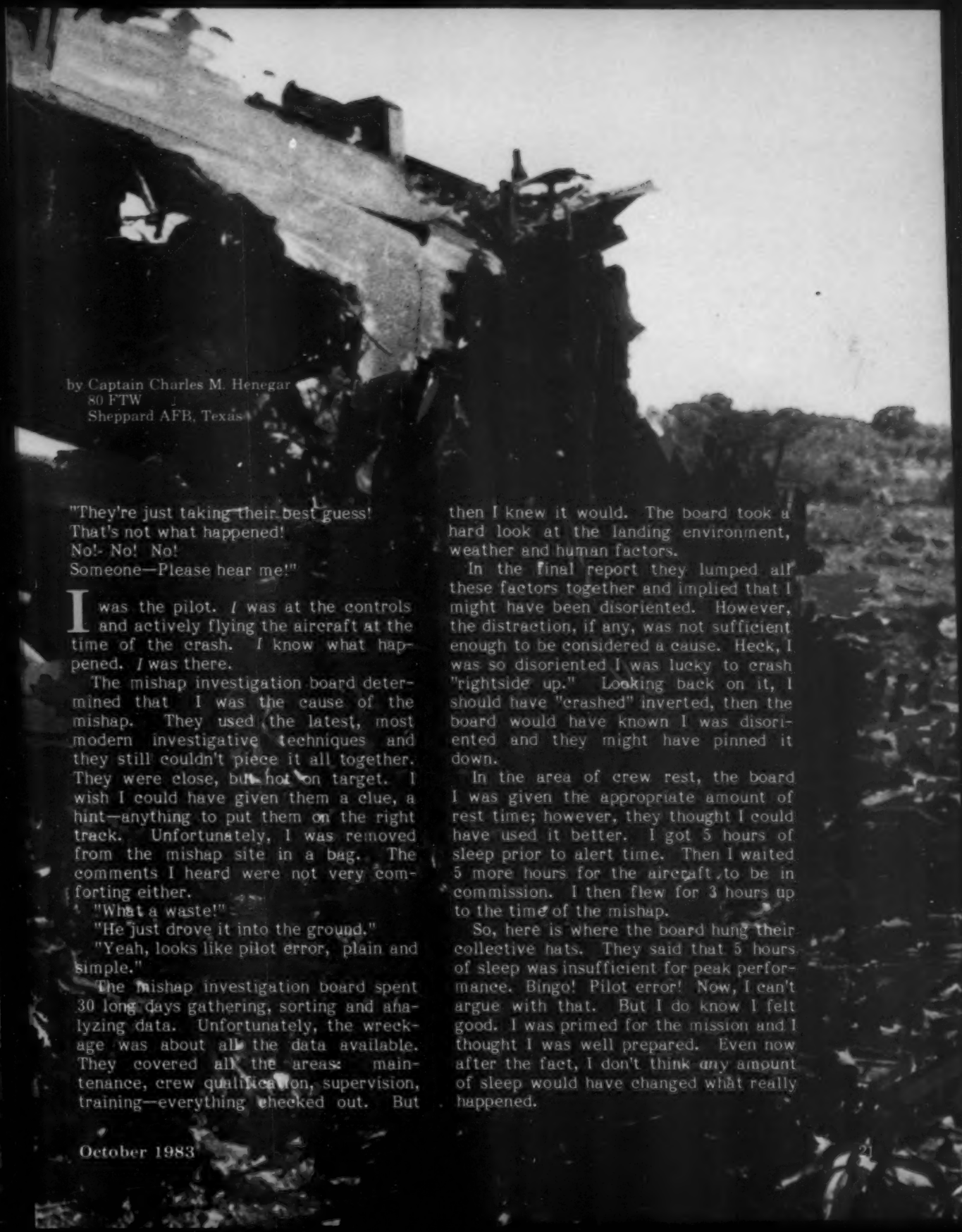
Portions of this article adapted from Cecil S. Richardson's "The Integrated Cockpit and the HH-60D Helicopter," in IBM's Technical Directions, Summer 1982.



An Unheard Voice

I know what happened. I was there!

Honorable Mention, 1983 MAC Flying Safety Writing Contest



by Captain Charles M. Henegar
80 FTW
Sheppard AFB, Texas

"They're just taking their best guess!
That's not what happened!
No!- No! No!
Someone—Please hear me!"

I was the pilot. *I* was at the controls and actively flying the aircraft at the time of the crash. *I* know what happened. *I* was there.

The mishap investigation board determined that I was the cause of the mishap. They used the latest, most modern investigative techniques and they still couldn't piece it all together. They were close, but not on target. I wish I could have given them a clue, a hint—anything to put them on the right track. Unfortunately, I was removed from the mishap site in a bag. The comments I heard were not very comforting either.

"What a waste!"

"He just drove it into the ground."

"Yeah, looks like pilot error, plain and simple."

The mishap investigation board spent 30 long days gathering, sorting and analyzing data. Unfortunately, the wreckage was about all the data available. They covered all the areas: maintenance, crew qualification, supervision, training—everything checked out. But then I knew it would. The board took a hard look at the landing environment, weather and human factors.

In the final report they lumped all these factors together and implied that I might have been disoriented. However, the distraction, if any, was not sufficient enough to be considered a cause. Heck, I was so disoriented I was lucky to crash "rightside up." Looking back on it, I should have "crashed" inverted, then the board would have known I was disoriented and they might have pinned it down.

In the area of crew rest, the board I was given the appropriate amount of rest time; however, they thought I could have used it better. I got 5 hours of sleep prior to alert time. Then I waited 5 more hours for the aircraft to be in commission. I then flew for 3 hours up to the time of the mishap.

So, here is where the board hung their collective hats. They said that 5 hours of sleep was insufficient for peak performance. Bingo! Pilot error! Now, I can't argue with that. But I do know I felt good. I was primed for the mission and I thought I was well prepared. Even now after the fact, I don't think any amount of sleep would have changed what really happened.

But this is the accident from another point of view. Here's what I saw.

The field was in the desert about 1,000 miles from nowhere. It was "austere" to say the least. There was a radio antenna tower about 200 feet tall, 2 miles from the runway. It had a flashing red light on top and a steady white light at about the halfway point. Other than the runway lights, there were no other discernable ground references. (What the board didn't realize was that *I didn't know* the tower was there.) It was a pitch black night—there were no stars, no moon—nothing. The only approach was a tacan which required us to circle to land. Have you ever done a night circle to a strange field at an austere location? I tried! Once! The board said I was current and qualified for circling approaches. After all, I *was* a flight examiner.

I had two options for the approach and landing. I could use the tacan and set myself up for a visual straight-in, or fly the published tacan approach to a circle. I opted for the latter since I was unfamiliar with the area and wanted to take a closer look. The tacan brought me in almost perpendicular to the runway. I had the field in sight but there was nothing to key off visually so I flew the approach primarily on the gauges. I figured I would overfly the runway, check it out, then circle to land. I had started my descent about 50 miles out and nailed it. I never had to level off. I was proud of myself.

As I said, for the most part I was on the gauges. As I approached the runway, everything looked good—airspeed, altitude, and heading. I began a left 45° bank turn to position myself on a modified downwind. About halfway through the turn, I glanced up from the instruments and that's when I saw what appeared to be an airplane. I couldn't determine direction, altitude or speed so I snapped the aircraft out of the bank (a big mistake), and you guessed it! Vertigo! Bad! The gyro's in my head failed instantly. I continued to watch the flashing red and steady white lights for any sign of movement (my last big mistake) and let me tell you there was plenty! Those lights were moving everywhere. Then suddenly they went out. Quiet. Dead silence.

Now, I don't blame the board. They did a pretty good job considering what they had to work with—less than I did and look where it got me. No, they're *good* at what they do. But I sure could have saved them a lot of time and effort. I should have known that tower was there. It was on the approach plate. I just didn't notice it. I should have looked and seen it during the approach. I shouldn't have been fooled. I should have gone to the gauges when my head went "tilt." *I should. I should. I should....*

You know what the really sad part is...? I'm not around to share my story so others don't make the same mistakes.

Yeah, mishap investigation boards do a pretty good job of putting the pieces back together, but there's nothing like first hand information.

I just wish someone knew my story.....

ABOUT THE AUTHOR

Captain Charles "Hoppy" Henegar is a 1973 ROTC graduate of the University of Massachusetts. He completed UPT at Laughlin AFB in 1974 and flew T-38s there until 1978. From 1978 until 1981, Hoppy flew C-141s at Norton where he was also a wing flying safety officer. Since 1981, he's been an IP in both T-37s and T-38s at Sheppard AFB, in addition to being a wing flying safety officer.

Viewer's Guide

Here's an update to the MAC Airport Qualification Program list. They are available to any Air Force unit, and many are on the shelves at your local MAC aircrew learning center. You may order programs through the base audiovisual library or the Aerospace Audiovisual Service, USAF Central Audiovisual Library, Norton AFB, California 92409. Programs that have been featured in *The MAC Flyer's* "Deja Vu" are shown in bold print.

Place	Program No.	*TMF* Issue
A-306, Chunchon, Korea	50681	
Adak NS, AK	51472	
Alameda NAS, CA	**38542**	**May 1981**
Albuquerque IAP, NM	**51466**	**Feb 1979**
Alice Springs Aprt, Australia	40167	
Altus AFB, OK	38536	
Amberley RAAFB, Australia	40168	
Andersen AFB, Guam	**40161**	**Nov 1977**
Andrews AFB, MD	**38535**	**Dec 1979**
Ascension Island AF Aux	**39540**	**Oct 1977**
Barbers Point NAS, HI	39508	
Barksdale AFB, LA	50486	
Beale AFB, CA	38519	
Bergstrom AFB, TX	38963	
Buckley ANGB, CO	**39540**	**Apr 1981**
Cagayan De Oro, Philippines	50718	
Campbell AAF, KY	**50792**	**Jun 1979**
Cape Newenham AFS, AK	40169	
Cape Romanzof AFS, AK	40170	
Carrasco IAP, Montevideo, Uruguay	39503	
Charleston AFB, SC	38528	
Cheju IAP, Korea	50498	
Christchurch IAP, New Zealand	40164	
Clark AB, Philippines	**50452**	**Feb 1980**
Colorado Springs Muni Aprt, CO	**38541**	**Aug 1979**
Coolidge Aprt, Antigua	51466	
Cubi Point NAS, Philippines	**50587**	**Aug 1978**
Dakar/Yoff, Senegal	38527	
Deigo Garcia, Chagos Archipelago, UK	n/a	**Jul 1981**
Dover AFB, DE	38529	
Dyess AFB, TX	38533	
Eielson AFB AK	40159	
El Toro MCAS, CA	38520	
Elmendorf AFB, AK	**51453**	**Oct 1980**
Frankfurt Main, Germany	**38526**	**Nov 1980**
Fukuoka AB, Japan	50385	
Galena AFS, AK	51467	
General Lyman Fld, HI	**39530**	**Jul 1977**
George AFB, CA	39507	
Grand Forks, AFB, ND	51174	
Guantanamo Bay NAS, Cuba	**40144**	**Dec 1977**
Hickam AFB, HI	**38531**	**Aug 1980**
Hill AFB, UT	**38532**	**Apr 1978**
Hoengsong, Korea	50780	
Howard AFB, Panama	**50475**	**Mar 1978**
Indian Mountain AFS, AK	**40172**	**Aug 1977**
Iwakuni MCAS, Japan	**50716**	**Sep 1978**
J.F. Kennedy IAP, Bolivia	**40145**	**Jan 1978**
Jan Smuts Aprt, S. Africa	38573	
Kadena AB, Japan	**50555**	**Aug 1982**
Kaneohe Bay MCAS, HI	**38532**	
Kangnung, Korea	50719	
Keesler AFB, MS	**50477**	**Jun 1980**
Kelly AFB, TX	**50465**	**May 1980**
Kimhae IAP, Korea	**50717**	
King Salmon, AK	51468	
Kodiak Airport, AK	51367	
Kunsan AB, Korea	**50588**	**Mar 1982**
Kwang Ju, Korea	50589	
Lajes Field, Portugal	**51456**	**Sep 1980**
Learmonth Aprt, Australia	40166	
Little Rock AFB, AR	40331	
March AFB, Ca	39506	
Mariscal Sucre Airport, Ecuador	**50501**	**Apr 1979**
Mather AFB, CA	38522	
McCalla Field, Cuba	52417	
McChord AFB, WA	**40160**	**Jul 1978**
McClellan AFB, CA	38523	
McGuire AFB, NJ	38530	
Moffett Field NAS, CA	38524	
Nellis AFB, NV	**50830**	**Oct 1979**
Norfolk NAS, VA	**51368**	**Jun 1977**
Norton AFB, CA	**51437**	**May 1978**
Offutt AFB, NE	50507	
O'Hakea RNZ AFB, New Zealand	40177	
Osan AB, Korea	**50556**	**Jun 1983**
Pago Pago Aprt, Am Samoa	**40162**	**May 1977**
Patrick AFB, FL	51161	
Pease AFB, NH	**50508**	
Perth IAP, Australia	**40165**	**Feb 1983**
Phoenix Sky Harbor INT, AZ	51703	
Pope AFB, NC	50791	
Pres Stroessner Aprt, Paraguay	39504	
Prestwick IAP, Scotland	**51435**	**Apr 1982**
Pudahuel IAP, Chile	**38502**	**May 1979**
R–407, Korea	50384	
R–222, Korea	51470	
RAF Lakenheath, UK	50453	
RAF Mildenhall, UK	51434	
RAF Upper Heyford, UK	**50777**	**Sep 1983**
Ramstein AB, Germany	**51430**	**Mar 1979**
Richmond RAAFB, Australia	40163	
Robert Gray AAF, TX	**40158**	**Feb 1978**
Rota NS, Spain	**51433**	**Dec 1981**
Scott AFB, IL	50476	
Seneca AAF, NY	50499	
Shemya AFB, AK	**38538**	**Jan 1981**
Sigonella NAS, Italy	**51475**	**Jun 1982**
Sondrestrom AB, Greenland	**38533**	**Sep 1977**
Sparrevohn AFS, AK	**40171**	**Oct 1978**
Taegu AB, Korea	**51474**	**Dec 1978**
Tatalina AFS, AK	40175	
Templehof AB, Germany	**51423**	**Oct 1981**
Tin City AFS, AK	51469	
Toncontin IAP, Honduras	**50500**	**Oct 1983**
Torrejon de Ardoz AB, Spain	**38525**	**Mar 1983**
Travis AFB, CA	50958	
Wainwright AAF, AK	**40176**	**Jan 1979**
Yokota AB, Japan	**50715**	**Nov 1978**

Toncontin IAP, Honduras

(elevation: 3,300 feet)

Located in south central Honduras, Toncontin International Airport is just south of the capital city of Tegucigalpa. The nearest U.S. airfield is Howard AFB, Panama, 540 miles southeast.

Toncontin has one runway, 19/01, 6,132 feet long and 148 feet wide, with no overruns on either end. Taxiways and parking ramps are located on both sides of the runway. Overflying the military ramp east of the runway is prohibited.

The VOR/DME runway 01 is the only DOD published instrument approach for the field. Circling on this approach is not authorized due to the high terrain that rises sharply close to the airfield. Terrain elevation is 500 to 700 feet above field elevation within a distance of 1 to 2 miles. There is a hill 695 feet above field elevation on extended runway centerline, 1.5 miles from the approach end of runway 01. The emergency safe altitude within 100 miles of Toncontin is 11,700 feet.

The field is unsuitable for C-5s and C-141s, but usuable by C-130s. MAC aircrews should consult the 21st Air Force airfield restrictions and operating procedures for Toncontin prior to flying there.

—Adapted from AQP 50500

On short final, runway 01. Terminal and parking ramps are to the left.

Runway 19, 2 miles out.

Runway 19, ½ mile out. A go-around presents a moderate hazard because of the hills at the departure end. Note the steep drop-off at the approach end of the runway.

C.R. TERROR

The Halloween Honcho strikes again!

The cool October morning was truly a remarkable one, for C.R. Terror, Lothario of Late, was on time for a mission briefing. Even more amazing, he was early!

"Why so early, Boss?" Sammy mumbled, still groggy in the pre-dawn stillness. "We usually don't see you until about an hour or less before takeoff."

"Morning lads," the Midnight Marauder jauntily replied in his best clipped imitation British accent, totally ignoring the subtle jibe from his sleepy second-in-command. "For your information, I've been out at the airplane for the past hour supervising the loading of a special pallet for the troops at Ramstein. Cost me three cases of 'White Feline', too. Oh well, at $3.99 a case I can afford to be generous with my brib—er, I mean, my tokens of appreciation. By the way lads, this is your basic Ramstein turn-around and I'm in the left seat. Any questions?"

Before any of his shocked crew could ask any, the Briefest of Briefers silenced them with a wave of his chubby hand and headed for the crew bus. "Time's awastin' crew. The 'Halloween Special' awaits." Mumbling, they followed

their leader to the bus.

By the time they arrived at their newly camouflaged C-5, the entire crew was ready to mutiny, having been forced to suffer through C.R.'s off-key bellowing of "The Monster Mash." Sammy, Blinky, Max and Ty led the charge as the crew poured out of the crew bus and swarmed into the waiting C-5, dragging their bags as they went. In their haste to escape, though, they left behind a hand-tooled, baby-blue B-4 bag with the inscription "World's Greatest Aviator" embroidered in white script.

Standing safely in the cargo compartment of the Galaxy, Max looked slyly at Ty Downs and asked innocently, "Do you think I oughta give the major a hand with his bag? You know how testy he gets when he has to get involved in a bag drag."

"Not on your life," the Lead Loadmaster quickly retorted. "The last guy who tried to lift that bag just got out of the hospital after surgery for a double hernia.

The Boss will manage—somehow." Noting a string of oaths and a loud groan at the crew entrance door, he turned to Max and grinned. "See, I told you he could make it."

Long Suffering Sam could stand it no longer. "Boss, what in the name of creation is that?" he inquired, pointing towards the towering canvas-shrouded pallet directly under the flight station ladder. "Is that your special pallet for the folks at Ramstein?"

"Right you are, Sammy," the Sweat-Soaked Skipper wheezed, leaning heavily on his B-4 bag. "That's it. By the way, Ty, you need to add the weight of my 'surprise' to the form-F. Let's see. I think the aerial porters said it weighed 2,500 pounds. Or was that 5,200 pounds? Ah, what the heck. On a 680,000 pound aircraft what's a couple of thousand pounds among friends?"

"Uh, Boss, did someone from the Port certify this pallet for air transportation?" Ty was eyeing the sinister mound of canvas suspiciously. "I mean, sir, is everything under there properly restrained with cargo nets and all...?" His voice trailed off as he waited for an answer he didn't want to hear.

"Not to worry! Not to *worry*!" C.R. was at his Snake Oil Salesman's-best. "Ty, I give you my personal word of honor, you have absolutely nothing to worry about!"

The crew, to a man, worried! Snake Oil Salesmen could be expected to speak with a forked tongue, and their Legendary Leader was no exception. Still, everything appeared in order. The manifest checked out (with the 'special' pallet penciled in, of course), the Form F was within limits, the load seemed secure and there wasn't a full colonel in sight. Of course, it *was* a 0345 launch.

Soon after, the Hobgoblin Honcho dazzled his troops again by calling for the checklists early, suprisingly in the proper sequence. Quickly, all four TF-39s were coaxed to life and the Largest Lockheed began it's rumble to the runway. The mysterious pallet was all but forgotten as the crew literally raced to complete the checklists.

"Lineup checklist there, copilot," the Rotund Reveler called out gleefully. "Let's hurry. I've got to get this load of Delaware's finest to our troops in Deutschland."

"Roger, Boss," Sammy sighed resignedly, still uneasy about the load below them. "I sure wish you'd tell us what you've managed to sneak under that canvas shroud, though."

But the Melodramatic Major would not divulge his secret. "Tell you what, lads. I'll entertain you with my 'tale of the purloined pallet' as soon as we coast out. Sammy, are we cleared for takeoff?"

Noting the copilot's weary nod, C.R. roared "Standing TRT, crew. Advancing throttles—now!" The veins on C.R.'s shiny forehead protruded as he used every ounce of his meager strength to hold the Gyrating Galaxy in place.

"Time!" Max barked over intercom. "Let's go baby!"

The Ghostly Giant thundered through the early morning mists as it gained airspeed rapidly. But it was at that precise moment that an ominous rumbling sound, not unlike an avalanche, echoed through the cockpit from the cargo compartment below.

"REJECT!" Sammy, Blinky and Max screamed simultaneously as the rumbling changed to audible splats and loud squishes.

"Spoilers!" C.R. croaked, his once-rosy complexion as pale as a ghost's sheet. "It can't be! It just can't be!" he moaned as he mashed down on the brakes heroically.

The Careening Cargohauler slowed abruptly as the brakes, spoilers and reverse thrust took effect. But the eerie splats and squishing sounds moved ever closer to the front of the aircraft. Totally confused, the Misguided Major's crew waited for the smoking binders to haul the Groaning Giant to a halt, and prepared themselves for a mad dash down the ladder to safety.

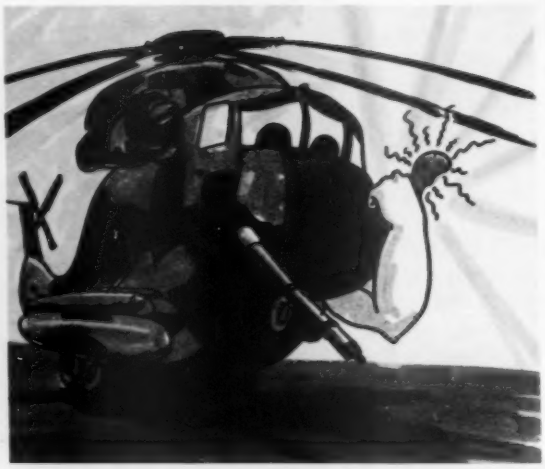
At long last, the "Halloween Special" slid to a stop in the overrun and the engines were quickly shut down. Max crept slowly to the flight station door and gazed warily into the cargo compartment below. After a long look, he slowly slumped to the floor in complete resignation. "I don't believe it," he finally muttered as the sirens of the crash trucks approached. "What a mess!"

Sammy vaulted from his seat in alarm. He stepped over the shocked engineer and started down the ladder. Seconds later, the ashen-faced captain returned to the cockpit. "You guys just aren't going to believe this," he whispered quietly. "There's smashed pumpkins all over the cargo compartment. They're splattered all over the aft ramp, smashed on the visor and spread all over the other cargo. They'll be cleaning pumpkin outa this thing for months." He turned slowly towards the suddenly Meek Major who was cowering in the C-5's left seat and a sickening thought flashed through his mind. "Boss," he pleaded, "tell me it's not true. Tell me we really didn't have a whole pallet load of pumpkins underneath that canvas." He also slumped to the floor in shock and dismay.

"Well, lads, since the surprise is out of the bag, so to speak, I guess there's no harm in telling you." The tremor in the Addled Aviator's voice was genuine. "Yes, I did arrange for a 'few' of Delaware's finest pumpkins to join us on our jaunt to Germany. But those two guys at the fruit stand assured me that the twine would be perfectly safe and could easily hold those jack-o-lanterns on the pallet." He moaned and slouched further in his seat as the first blue staff car screeched to a stop in front of their aircraft. "Now I'll bet they want me..er, us to help with the cleanup so we can be on our way. What do ya say, lads? Shall we help the maintainers and the fleet service folks with this little cleanup detail?"

"Sure Boss," they replied in unison as the first colonel managed to slip his way to the flight station, his uniform festooned with pumpkin remains. "Don't think we're gonna be going *anywhere* soon. But please, Boss, don't *ever* mention the word 'pumpkin' again." ✈

Quick Stoppers



He Stuck in His Thumb and ... Oops!

The HH-53 pilots were in their seats attempting to assist maintenance in adjusting the throttles. Maintenance was searching for a throttle quadrant side plate, so the pilot removed his glove and reached down behind the center console with his right hand. He stuck his thumb into the center console avionics compartment blower which was operating at the time. Although the blower had been configured with the standard three-wire safety shield, the shield's inner three rings were missing which allowed entry of the pilot's thumb into the blower. Ouch! Still, he was lucky to be DNIF for only 11 days.

The real cause of this little mishap isn't as obvious as it may seem. Seems the fan is located on the aft lower right side of the center console and, due to the closeness of the flight engineer's seat, may be easily damaged by a flight engineer's dainty size 12 brogans. Don't worry, though. Only Pave Low HH-53s have the blower fan in this position.

A Real Gasser

Shortly after takeoff for a local training flight, the loadmaster (LM) asked the flight engineer (FE) to come to the cargo compartment to check for smoke and fumes. The FE immediately verified the presence of some pretty noxious smelling odors and advised the crew. The rest of the crew went on oxygen and accomplished the smoke and fumes elimination checklist.

After an immediate and uneventful landing, the crew egressed the aircraft on the taxiway. A short visit to the flight surgeon's office showed no ill effects and all crewmembers were released, no one seemingly any worse for the experience.

Later that evening, however, the FE reported to the emergency room complaining of severe headaches and shortness of breath. He subsequently spent the night in intensive care. The LM experienced the same symptoms, but chose not to report to the hospital. In time, both men's symptoms disappeared and both are now back on the job. Investigation revealed the noxious odor was phosgene gas, released when an insulation blanket containing polyvinylchloride (PVC) was scorched by contact with a bleed air duct at flight station 250.

Air Force Systems Command Design Handbook 1-7, *Aircraft Materials*, now prohibits the use of PVC in aircraft interiors. Unfortunately, DH 1-7 isn't regulatory for existing aircraft. Scorched insulation is not "normal" by any means, and the fumes associated with phosgene gas can be incapcitating--even deadly. Further, a visit to the local flight surgeon is warranted if you develop respiratory distress symptoms following exposure to any fumes!

Misty

A Starlifter crew found themselves in need of an umbrella, recently, when they encountered a shower in the cargo compartment. While on approach to a Navy base, the loadmaster noticed hydraulic fluid was misting from the vicinity of the flap motor. The number 3 hydraulic system completely depleted before the crew could isolate the flap drive and reservice the reservoir with 22 quarts of fluid. The crew declared an emergency and recovered back to their home station.

Postflight inspection of the components of the flap drive system revealed a failure of the seal between the flap pack control valve and the gear box assembly. Misting hydraulic fluid can do strange and potentially deadly things to you and your aircraft. Beware!

Run-Down Milkstool

We find the trusty Herk crew about to unload their cargo at some distant locale. Preparing for the offload of two single pallets and a triple married pallet, the loadmaster places the wooden ramp support (a milkstool) under the ramp. Unfortunately, the 10K forklift is inop and no other means exists to unload the pallets. The only alternative is to use combat offload Method A for the single pallets and Method C for the married pallets. But to do this, the C-130 has to be backed up because of the tight confines of the ramp. The left seater briefs the procedures and reverses the Herk's props. The loadmaster has neglected one small detail, however. The milkstool is still under the ramp as the Herk begins backing up. Result: Damage to the milkstool, anti-collision beacon and aft nose gear door to the tune of almost $7,400! What an oversight!

Too Little, Too Late

Combat SAR! It's good flying and there's lots of it. We find our trusty Huey crew somewhere in a designated low-level training area practicing some threat avoidance maneuvers. The AC upgrade student is doing well, though he hasn't flown as a student in the past couple of weeks. During a planned descent at approximately 300 feet above the bottom of the area, he enters a right turn to counter a "threat" called at his 6 o'clock. After 40° of turn, the IP calls "high NR" (main rotor rpm). The student AC looks inside, reduces his bank angle and applies collective to reduce the rpm. The Huey remains in a slight descent, a fact the IP notices, so he takes control. He then rolls out of the turn, applies aft cyclic and increases the collective to maximum torque. Now with max power on the Huey, the descent rate slows somewhat, but never fully stops. The aircraft enters some trees, contacting the tops of several with the main rotors. The IP maintains control, does a controllability check and flies the dinged fling-wing to a nearby civilian field. Beside damage to the main rotor, there was damage to the left nose panel and chin window, and to the synchronized elevators.

There were a couple of main causes for this incident. First, the student lacked continuity in his training, which was documented in his training folder. Additionally, the student's initial evasive maneuver training was accomplished some 8 months prior to the incident, with no further upgrade training in these maneuvers documented in the interim. In fact, the student had accomplished currency requirements in this event only as a mission-ready copilot. The ground training block of instruction hadn't been completed, either.

Next, although the IP did take control of the 'copter as it was descending, his actions were too little and too late to prevent an impact with the trees, although soon enough to prevent some really serious damage from being inflicted on the aircraft or its occupants!

Notable Quote

Jumping to conclusions seldom leads to happy landings.

S. Siporin

After Deadlines

GENERAL THOMAS M. RYAN, JR., CINCMAC, will be the keynote speaker at the 15th annual Airlift Association national convention to be held 21-23 October 1983 at the Chase Park Plaza Hotel in St. Louis. Registration fee is $80 each. Partial registration for Saturday, 22 October, is $50 per person. For registration materials, write: Airlift Association Convention, P.O. Box 193, Scott AFB, IL 62225. Permissive TDY is authorized for this event with the approval of your commander.

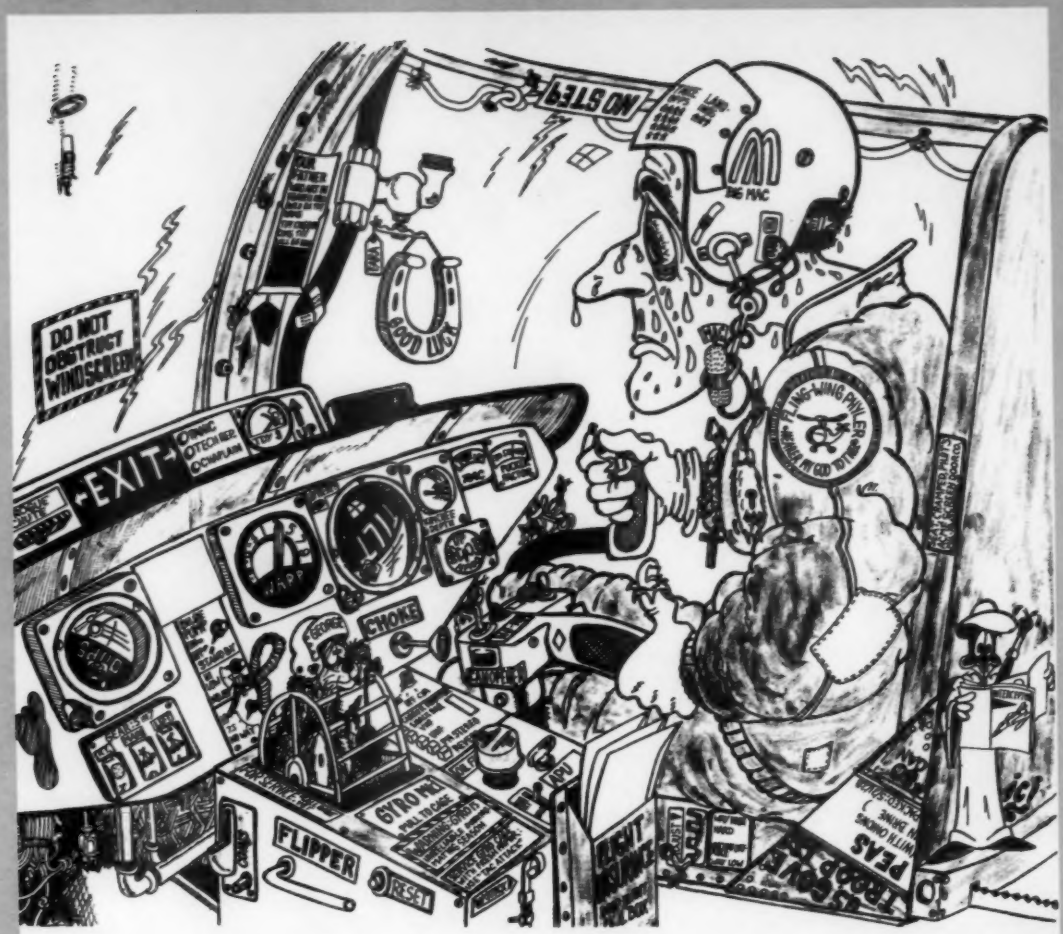
NEW FACES AT MAC SAFETY—With the summer "moving" season completed, MAC Safety has several new folks. Hailing from the Airlift Center, Pope AFB, North Carolina, is Major Al DeCastro who will serve as a C-130 weapons system safety manager. Our new C-141 flight safety officers are Major Dan Driggs from 834th ALD Safety, Hickam AFB, Hawaii, and Major Bob Gee from 63d MAW Safety, Norton AFB, California. Our new administrative airlift safety manager is Captain Bill Park, 375th AAW, Scott AFB, Illinois. Captain Jeb Blume, 23rd Air Force, is our new "fling-wing flyer," taking over as the helicopter systems safety manager.

1983 MAC FLIGHT MISHAP EXPERIENCE—As of 6 September, MAC has experienced two DOD Class A flight mishaps and six DOD Class B flight mishaps this year. In June, a C-130H crashed during a low-level tactical training flight resulting in six fatalities and a destroyed aircraft. In July, a C-5 was extensively damaged when it touched down short on landing. Cost of the C-5 Class A mishap is estimated to be $54 million. There were three Class B mishaps during January 1983. A C-141B was damaged during a gear-up landing (cost: $459,000). One C-5A was damaged by multiple birdstrikes on final approach (cost $280,000) while another C-5 experienced multiple birdstrikes on takeoff (cost $384,000). In May, a C-141 was damaged during landing following inflight separation of the left main landing gear assembly (cost: $181,000). In June, the rotor blades of a taxiing HH-53C struck rotor blades of a parked HH-53C (cost: $348,000). In August, a C-130E was damaged during landing when the left main landing gear collapsed. This last mishap is still under investigation.

ALASKA GUARD GETS NEW HERKS—Alaska Department of Military Defense Officials and the 176th Tactical Airlift Group took delivery of the first of eight new C-130H Hercules transports on 19 July at the Lockheed-Georgia factory in Marietta, Georgia. The remaining seven C-130s will be delivered by the end of 1983. The new aircraft, replacing eight C-130E models, will be based at Kulis Air National Guard Base at Anchorage, Alaska. Information courtesy: Lockheed-Georgia Public Information Office.

MILITARY EDITOR VACANCY FOR *THE MAC FLYER*—We have an opening in May or June 1984 for Associate Editor for MAC's flight safety journal. We need a company grade pilot or navigator with rescue, special operations, or tactical airlift experience. Ambition and ability to tell a good story are strong qualifications. Flight safety and/or public affairs experience a plus. Desired PCS date in May or June 1983. Interested officers should contact Major Jim Lee, Supervising Editor, Autovon 638-3534, or write to HQ MAC/IGFE, Scott AFB, IL 62225.

☆ U.S. GOVERNMENT PRINTING OFFICE: 664-016/6



Helicopter Pilots Are Different

"The thing is, helicopters are different from planes. An airplane by its nature wants to fly, and if not interfered with too strongly by unusual events or by a deliberately incompetent pilot, it will fly. A helicopter does not want to fly. It is maintained in the air by a variety of forces and controls working in opposition to each other, and if there is any disturbance in this delicate balance the helicopter stops flying, immediately and disastrously.

"There is no such thing as a gliding helicopter.

"This is why being a helicopter pilot is so different from being an airplane pilot, and why, in general, airplane pilots are open, clear-eyed, bouyant extroverts, and helicopter pilots are brooders, introspective anticipators of trouble. They know if something bad has not happened, it is about to."

—Harry Reasoner

Cartoon by Lieutenant Colonel Ed Cooke